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Patent Amendment

REMARKS

This application has been carefully reviewed in light of the Office Action dated June 16, 2005. Applicant has amended claims 5 and 12. Reconsideration and favorable action in this case are respectfully requested.

The Examiner has rejected claims 1-14 under 35 U.S.C. §102(b) as being unpatentable over U.S. Pat. No. 6,000,036 to Durham. Applicants have reviewed this reference in detail and do not believe that it discloses or makes obvious the invention as claimed.

The Examiner has rejected claim 15 under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 6,718,164 to Korneluk in view of U.S. Pat. No. 6,000,036 to Durham. Applicants have reviewed these references in detail and do not believe that they disclose or make obvious the invention as claimed.

Durham addresses a problem that is similar to that described in the present application, albeit in a much different manner. The problem is to prevent localized hot spots which can cause failures in a processing circuit. The Durham device prevents hot spots by steering instructions to one of a plurality of substantially equivalent functional units. Power dissipation is measured in each area where a functional units is located. If the power dissipation within an area exceeds a predetermined amount, a localized heating problem exists within the area. An instruction is dispatched or routed to one of the other functional units located in an area that is not experiencing a localized heating problem (Abstract, col. 3, line 55 through col. 4, line 61, Figure 4, col. 6, line 24 – 65).

Thus, the Durham reference teaches a scheme of reducing localized hot spots in a processor by diverting instructions away from a hot spot to other processors. This approach has a significant drawback – the functional units to which an instruction may be diverted must perform substantially the same function or operation in response to an

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instruction, although they do not need to be structurally identical (col. 3, lines 45-54). Accordingly, redundant circuitry must be provided to accomplish this method.

Claim 1 is directed to an entirely different method of reducing hot spots. Rather than reducing instructions to a first processing module experiencing the excessive temperature, the present invention modifies parameters for executing tasks on one or more *adjacent* processing modules in order to reduce heat generated by the *adjacent processing modules* and contributing to the excessive temperature at the first processing module. By reducing heat generated by the *adjacent* processing modules (which are not necessarily operating at an excessive temperature), the temperature at the first processing module will be reduced.

The method presented by claim 1 is substantially different than that proposed by Durham. Durham does not modify parameters for executing tasks on one or more adjacent processing modules *in order to reduce heat generated by the adjacent processing modules*; if anything, Durham increases the heat generated by the adjacent processing modules.

Accordingly, Applicants respectfully request allowance of independent claim 1 and dependent claims 2-4. For the reasons stated above, Applicants also request allowance of claims 8-11 and 15.

In claim 5, execution of multiple tasks in a processing circuit is controlled by (1) generating a task allocation scenario for allocating multiple tasks among the plurality of processing modules, (2) prior to executing the tasks, estimating temperature-associated information for various locations in the processing circuit as would occur if the tasks were executed according to the scenario and (3) determining whether a temperature threshold would be exceeded by executing the tasks according to the scenario.

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Durham shows none of these steps. Durham does not show generation of a task allocation scenario for allocating multiple tasks among a plurality of processing modules. The portion of Durham cited by the Examiner (col. 1, line 60 through col. 2, line 6) is merely is a collection of general statement of the instruction steering described above. Durham does not generate task scenarios – it diverts the next instruction away from a functional unit with a temperature problem to a functional unit without a temperature problem.

Durham also does not show estimating temperature-associated information for various locations in the processing circuit *as would occur if the tasks were executed according to the scenario*. Durham has no scenarios upon which to estimate temperature-associated information. The power estimators 110, 112 in the passage cited by the Examiner measure or estimate power dissipation within their associated areas (col. 3, lines 55-59). From the measured or estimated power within the areas, the power estimators determine whether the power in the area exceeds a given level. If the power exceeds the level, then a heating problem exists (col. 3, lines 59-66). Thus, Durham estimates current temperature based on current power dissipation. This varies significantly from the present invention where temperature information is estimated based on a scenario.

Durham also does not determine whether a temperature threshold would be exceeded by executing the tasks according to the scenario. Again, Durham only looks at the current state of the device, i.e., whether the current power exceeds a threshold in a given area, not whether a proposed scenario would result in excessive temperature if the tasks were executed according to the scenario.

Accordingly, Applicants respectfully request allowance of claim 5 and dependent claims 6-7. For the reasons set forth in connection with claim 5, Applicants also request allowance of independent claim 12 and dependent claims 13-14.

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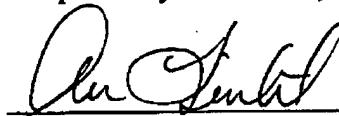
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The Commissioner is hereby authorized to charge any fees or credit any overpayment, including extension fees, to Deposit Account No. 20-0668 of Texas Instruments Incorporated.

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Alan W. Lintel, Applicants' Attorney at (972) 664-9595 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully Submitted,



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